



NOVEL MUTATED MAMMALIAN CELLS  
AND ANIMALS

10 The present application claims priority to U.S. Provisional  
5 Application Number 60/179,110 which was filed January 31, 2000.

The present application incorporates U.S. Patent No. 6,080,576  
and U.S. Applications Ser. Nos. 08/726,867, 08/728,963,  
08/907,598, 08/942,806, 60/109,302, and 09/276,533 and their  
respective disclosures herein by reference in their entirety.

1.0. FIELD OF THE INVENTION

10 The present invention is in the field of molecular genetics.  
The application discloses novel mutated cells that are generated  
by process involving the insertion of at least a portion of a  
15 genetically engineered viral vector into the chromosome. The  
specifically disclosed recombinant vector allows for the rapid  
identification of the gene that has been mutated by using  
nucleotide or amino acid sequence information to identify the  
gene that has been mutated by the vector. When mutated embryonic  
20 stem cell clones are produced, such cells can be used to produce  
mutant animals capable of germline transmission of the described  
mutated genes.

2.0. BACKGROUND OF THE INVENTION

25 Most mammalian genes are divided into exons and introns.  
Exons are the portions of the gene that are spliced into mRNA and  
encode the protein product of a gene. In genomic DNA, these  
coding exons are often divided by noncoding intron sequences.  
Although RNA polymerase transcribes both intron and exon  
30 sequences, the intron sequences must be removed from the  
transcript so that the resulting mRNA can be translated into  
protein. Accordingly, all mammalian, and most eukaryotic, cells  
have the machinery to splice exons to produce mRNA. Gene trap  
vectors have been designed to insert into the introns of genes in  
35 a manner that allows the cellular splicing machinery to splice  
vector encoded exons to cellular mRNAs. Commonly, gene trap